National Institute of Environmental Health Sciences

Introduction, scenarios for establishment and seasonal activity of aedes albopictus in the Netherlands

Author(s): Takumi K, Scholte EJ, Braks M, Reusken C, Avenell D, Medlock JM
Year: 2009
Journal: Vector Borne and Zoonotic Diseases. 9 (2): 191-196

Abstract:

The Asian tiger mosquito Aedes albopictus was detected for the first time in the Netherlands in the summer of 2005. Aedes albopictus is a competent vector of several human viral diseases, and therefore the recent appearance of the vector is a concern to local public health authorities. In 2006 and 2007, the mosquito was found repeatedly and regularly at Lucky bamboo import companies. To assess whether imported Ae. albopictus could establish to produce subsequent generations in the following years or whether the winter conditions in the Netherlands would prove too cold to allow overwintering of diapausing eggs, predictions were made using a Geographic Information Systems (GIS) model based on January average temperature and the annual precipitation recorded in 2006. Seasonal activity of overwintering Ae. albopictus was estimated for temperate strains based on the weekly average temperature and weekly photoperiod using spring egg hatching thresholds of 10.5 degrees C and 11.25 hours, and egg diapause and adult survival thresholds of 9.5 degrees C and 13.5 hours. The analyses indicate that the climate conditions in the Netherlands over the past 10 years were favorable to allow overwintering of diapausing eggs of temperate strains of Ae. albopictus, particularly in the western coastal region. This region was also the area where adult Ae. albopictus were intercepted inside and surrounding plant glasshouses. The estimated number of weeks elapsing between first egg hatching in spring and the production of diapausing eggs in autumn ranged between 17 and 22 weeks in 2006.

Source: http://dx.doi.org/10.1089/vbz.2008.0038

Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: author derived scenarios

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Netherlands

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: General Mosquito-borne Disease

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Short-Term (

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content